

GRADUATE PROGRAM IN PHYSICS

GRADUATE SCHOOL
OF ARTS AND SCIENCES
OF
BRYN MAWR
COLLEGE

WHY BRYN MAWR?

The Department of Physics at Bryn Mawr offers small classes with access to global connections. Our students conduct exciting and interdisciplinary research at Bryn Mawr and beyond. Our location makes it easy to partner with schools like Haverford College, Swarthmore College, Villanova University, and the University of Pennsylvania. Students also have opportunities to collaborate on national and global levels with access to the Advanced Photon Source (APS) at Argonne National Laboratory and the Large Plasma Device (LAPD) at UCLA.



EXCELLENT LABORATORY FACILITIES

The Park Science Center, which recently underwent a \$21 million renovation, provides modern lab spaces that encourage interdisciplinary work. Instrumentation includes:

- Atomic force microscope
- Electrochemical deposition system
- Class 1000 soft-curtain cleanroom
- Vibrating sample magnetometer
- X-ray diffractometer
- Various tunable pulsed and CW laser systems
- Molecular beam apparatus
- Two ultrahigh vacuum systems for laser cooling and trapping
- Machine and instrument shop
- Extensive information technology and library resources
- High vacuum plasma chamber
- 10kV pulse power plasma source
- High vacuum sputtering deposition system
- Mask-aligner lithography

CURRENT RESEARCH ACTIVITIES

- High energy physics, quantum field theory, and string theory
- Nanoscale materials fabrication, characterization, and application
- Ultracold Rydberg atoms
- Plasma, laboratory astrophysics, fusion energy and turbulence
- Molecular spectroscopy and dynamics
- Galaxy evolution and dynamics

GRADUATE GROUP IN SCIENCE AND MATHEMATICS

The Graduate Group in Science and Mathematics (GGSM) is an interdepartmental group that includes programs in Chemistry, Mathematics, and Physics. The GGSM promotes scholarly and social interactions among graduate students through interdisciplinary research projects and a graduate student mentoring program.

WHAT OUR STUDENTS DO NEXT

Postdoctoral Appointments: University of Pennsylvania, NIST/University of Maryland, Vanderbilt University, Lawrence Livermore Laboratory

Academic Positions: University of Michigan, Rice University, Stony Brook University, University of Connecticut, Drew University, Dickinson College, Mount Union College, Ursinus College, Bates College, Middlebury College, Denison University, Chestnut Hill College

Industry Positions: IBM, Lucent Technologies, Naval Research Laboratory, AT&T Bell Laboratories

FINANCIAL SUPPORT

Bryn Mawr offers fellowships, teaching assistantships, grants, and tuition awards to eligible incoming students. Fellowship stipends start at \$26,250 (12 month). All financial aid awards include a full health insurance grant, full tuition award, and can be guaranteed for multiple years.



GRADUATE FACULTY



XUEMEI MAY CHENG
Associate Professor
Ph.D., Johns Hopkins University, 2006

RESEARCH: Nanomaterials and spintronics

May's research focuses on the fabrication, characterization, and application of nanoscaled materials, especially for spintronics or biomedical applications. Her main experimental methods include sputtering deposition, lithography patterning, x-ray magnetic circular dichroism spectroscopy, x-ray photoemission electron microscopy, magneto-optical Kerr effect imaging, and vibrating sample magnetometry. She has received an NSF CAREER award, two NSF MRI grants, and several other regular NSF grants. She has access to DOE user facilities at national laboratories. She is a Principal Investigator of an NSF Science and Technology Center for Engineering and Mechanobiology led by UPenn.



KATE DANIEL
Assistant Professor
Ph.D., Johns Hopkins University, 2015

RESEARCH: Astrophysics

Kate's primary interests are galaxy evolution and dynamics. She makes analytic arguments, builds galaxy models, and uses moderate simulations to explore the orbital response of stars to non-axisymmetric structures in the disk, like spiral arms, giant molecular clouds, or dark matter substructure. She focuses on understanding dynamical responses to resonances in the disk, the nature of transient spiral structure, and the formation of major structural components of a disk galaxy. Kate has received major funding through the NSF and AAUW.



MICHAEL W. NOEL
Professor
Ph.D., University of Rochester, 1996

RESEARCH: Ultracold Rydberg atoms

Mike's research focuses on experimental studies of ultracold samples of highly excited atoms. The impact of these experiments is broad, with connections to condensed matter physics of spin glasses and crystals; low temperature atomic, molecular, and optical physics involving many body interactions; and low temperature plasma physics. He received an NSF CAREER award in 2002. His work is currently supported by the NSF.



DAVID SCHAFFNER
Assistant Professor, Director of Graduate Program
Ph.D., University of California, Los Angeles, 2013

RESEARCH: Plasma physics

David's research focuses on measuring and understanding the turbulent nature of hot ionized gases called plasmas. His main interest lies in comparing the turbulent nature of laboratory-based plasmas to astrophysically relevant versions such as that found in the solar wind (a plasma ejected by the sun at Mach 10 out into the solar system) or in the magnetosphere (the plasma which surrounds the Earth and is confined by the Earth's magnetic field). He collaborates with Swarthmore College on a fusion research project through ARPA-E, and conducts basic plasma studies on the Large Plasma Device at UCLA. David has been awarded an NSF CAREER award to establish the Bryn Mawr Plasma Laboratory.



MICHAEL B. SCHULZ
Associate Professor,
Ph.D., Stanford University, 2002

RESEARCH: High energy physics, quantum field theory, string theory

Michael's work focuses on string theory and its applications to particle physics and cosmology. His current research seeks to elucidate the rich geometrical structure that underlies generalized string theory compactifications, and to develop a more complete picture of how ten dimensional string theory gives rise to realistic four dimensional quantum field theories that can describe our world.



CONTACT US

For admissions information, visit www.brynmawr.edu/gsas/admissions

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